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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/529,873	11/28/2005	Nikolai Soren Kirkby	2829.0020001/EJH/OAL	7765

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EXAMINER	
TONGUE, LAKIA J	

ART UNIT	PAPER NUMBER
1645	

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10/28/2010	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/529,873	KIRKBY ET AL.	
	Examiner	Art Unit	
	LAKIA J. TONGUE	1645	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 July 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-10,13,16-18,20,21,23,25-27,29-42,44-56,60 and 61* is/are pending in the application.

4a) Of the above claim(s) *29-31 and 35-37* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-10,13,16-18,20,21,23,25-27,32-34,38-42,44-56,60 and 61* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

FINAL ACTION

1. Applicant's response filed on July 30, 2010 is acknowledged. Claims 1, 2, 4-10, 13, 16-18, 20, 21, 23, 25-27, 29-37, 38-42, 44-56, 60 and 61 are pending. Claim 1 has been amended. Claims 29-31 and 35-37 have been previously withdrawn from further consideration as being drawn to non-elected inventions. Claims 1, 2, 4-10, 13, 16-18, 20, 21, 23, 25-27, 32-34, 38-42, 44-56, 60 and 61 are currently under examination.

Specification

2. The incorporation by reference of WO patent application no. PCT/DK02/00229 on page 28 is improper. The incorporation of essential material in the specification by reference to an unpublished U.S. application, foreign application or patent, or to a publication is improper. Applicant is required to amend the disclosure to include the material incorporated by reference, if the material is relied upon to overcome any objection, rejection, or other requirement imposed by the Office. The amendment must be accompanied by a statement executed by the applicant, or a practitioner representing the applicant, stating that the material being inserted is the material previously incorporated by reference and that the amendment contains no new matter. 37 CFR 1.57(f).

Rejections Withdrawn

3. In view of Applicant's amendment, the rejection of claims 1, 2, 4-6, 9, 10, 13, 16-18, 20, 21, 23, 25-27, 32-34, 38-42, 46-56, 60 and 61 under 35 U.S.C. 103(a) as being unpatentable over Foldvari et al. (WO 99/11247) and British Pharmacopoeia 1993 (Surgical Materials, 1996; 1943-1944) is withdrawn.

4. In view of Applicant's amendment, the rejection of claims 1, 2, 4, 5, 7-9, 10, 13, 16-23, 25-27, 32-34, 38-42, 46, 47, 49-55, 60 and 61 under 35 U.S.C. 103(a) as being unpatentable over Foldvari et al. (WO 99/11247) and Lee et al. (International Journal of Pharmaceutics, 2001; 221: 1-22) is withdrawn.

5. In view of Applicant's statements regarding joint ownership of Kirkby et al. made on pages 18 and 19 of the remarks filed July 30, 2010, the rejection of claims 1, 2, 4, 5, 9, 10, 13, 16-18, 20, 21, 23, 25-27, 32, 34, 38-42, 44-55, 60 and 61 under 35 U.S.C. 103(a) as being unpatentable over Foldvari et al. (WO 99/11247), and further in view of Kirkby et al. (U.S. 2004/0185057 A1) is withdrawn.

6. In view of Applicant's statements regarding joint ownership of Kirkby et al. made on pages 18 and 19 of the remarks filed July 30, 2010, the rejection of claims 1, 2, 4-6, 9, 10, 13, 16-18, 20, 21, 23, 25-27, 32, 34, 38-42, 44-56, 60 and 61 under 35 U.S.C. 103(a) as being unpatentable over Foldvari et al. (WO 99/11247) and Kirkby et

al. (U.S. 2004/0185057 A1), and further in view of British Pharmacopoeia 1993 (Surgical Materials, 1996; 1943-1944) is withdrawn.

7. In view of Applicant's statements regarding joint ownership of Kirkby et al. made on pages 18 and 19 of the remarks filed July 30, 2010, the rejection of claims 1, 2, 4, 5, 7-9, 10, 13, 16-18, 20, 21, 23, 25-27, 32, 34, 38-42, 44-56, 60 and 61 under 35 U.S.C. 103(a) as being unpatentable over Foldvari et al. (WO 99/11247) and Kirkby et al. (U.S. 2004/0185057 A1) and further in view of Lee et al. (International Journal of Pharmaceutics, 2001; 221: 1-22) is withdrawn.

Rejections Maintained

Based upon the objection to the specification as set forth above the rejection is maintained because the incorporation by reference is improper.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. The rejection of claims 1, 2, 4, 5, 9, 10, 13, 16-18, 20, 21, 23, 25-27, 32, 34, 38-42, 46, 47, 49-55, 60 and 61 under 35 U.S.C. 102(b) as being anticipated by Foldvari et al. (WO 99/11247) is maintained for the reasons set forth in the previous office action.

Applicant argues that:

1) The term "cationic sterol" is defined in Dalsgaard as "a sterol carrying a net positive charge at pH 7.0"; none of the cholesterols disclosed in Foldvari et al. carry a net positive charge at pH 7.0.

2) Foldvari et al. disclose flexible lipid vesicles, which do not adopt a micro-particle structure in the form of a rigid cage-like matrix.

Applicant's arguments have been considered and deemed non-persuasive.

Claims 1, 2, 4, 5, 9, 10, 13, 16-18, 20, 21, 23, 25-27, 32, 34, 38-42, 46, 47, 49-55, 60 and 61 are drawn to a construct for transdermal delivery of at least one immunogen to an individual comprising: a) said at least one immunogen, or at least one expressible nucleic acid encoding said immunogen; b) an occlusion vehicle and c) an immunogen delivery system comprising: i) at least one cationic sterol and ii) at least one saponin, wherein said saponin forms a complex with said cationic sterol, and wherein said complex adopts a micro-particle structure in the form of a rigid cage-like matrix; wherein, if the construct comprises said nucleic acid, said cationic sterol or said saponin interacts electrostatically or hydrophobically with said nucleic acid.

With regard to Point 1, while the sterol, particularly the cholesterol of Foldvari et al. do not specifically state that the sterol carries a net positive charge at pH 7.0; Applicant has not made any statements or provided any evidence of record to demonstrate the distinction between the cholesterol of record and the cholesterol of the prior art. Absent any evidence to the contrary the cholesterol are one in the same and encompasses a cationic sterol; therefore the rejection is maintained.

With regard to Point 2, the claims are drawn to a composition, the limitation "said complex adopts a micro-particle structure in the form of a rigid cage-like matrix" embarks on a process limitation. Applicant is reminded that "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). Moreover, Foldvari discloses an immunogen delivery system comprising at least one cationic sterol and at least one saponin; the complex formed necessarily adopts a micro-particle structure in the form of a rigid cage-like matrix, thus meeting the limitation of the claim.

As previously presented, Foldvari et al. disclose a biphasic lipid vesicle composition for transdermal administration. The transdermal device comprises a reservoir adapted to retain during storage and release in operation lipid vesicles containing an entrapped immunogen (see page 12, lines 18 and 19). The transdermal device includes a reservoir with a backing layer and membrane joined by an adhesive (see page 12, lines 22-25). Foldvari et al. disclose that the backing layer serves as a protective, impermeable covering to prevent loss of contents. Suitable backing materials include films for medical use (see page 12, lines 31-33). Foldvari et al. disclose that the device can be applied directly to the skin (see page 12, line 14). Foldvari et al. disclose that the reservoir includes lipid vesicles in suspension, and the lipid vesicles cross the membrane to contact and penetrate the skin for administration of the entrapped immunogen (see page 14, lines 13-15). Also, Foldvari et al. disclose that the membrane is designed to be a rate controlling membrane (see page 14, line 24).

Foldvari et al. disclose that the composition of the present invention includes a suspension containing an entrapped immunogen effective to elicit an immune response, e.g., for purposes of immunization or vaccination. In general, a wide variety of immunogens are suitable for use in the present invention, they include but are not limited to influenza virus antigens *Bordetella pertussis* antigens (such as pertussis toxin, filamentous haemagglutinin, pertaetin), human papilloma virus (HPV) antigens, *Helicobacter pylori* antigens, rabies antigens, tick-borne encephalitis (TBE) antigens, meningoccal antigens (such as capsular polysaccharides of serogroup A, B, C, Y and W-135), tetanus antigens (such as tetanus toxoid), diphtheria antigens (such as diphtheria toxoid), pneumococcal antigens (such as *Streptococcus pneurnoniae* type 3 capsular polysaccharide), tuberculosis antigens, human immunodeficiency virus (HIV) antigens (such as GP-120, GP-160), cholera antigens (such as cholera toxin B subunit), 5 staphylococcal antigen (such as staphylococcal enterotoxin B), shigella antigens (such as shigella polysaccharides), vesicular stomatitis virus antigen (such as vesicular stomatitis virus glycoprotein), cytomegalovirus (CMV) antigens, hepatitis antigens (such as hepatitis A (HAV), B (HBV), C (HCV), D (HDV) and G (HGV) virus antigens, respiratory syncytial virus (KSV) antigens, herpes simplex antigens, or combinations thereof(e.g.,10 combinations of diphtheria, pertussis and tetanus (DPT)), antigens against anthrax and *Yersinia pestis* (see page 6, lines 22-33 and page 7, lines 1-13). Moreover, in addition to the vesicle-forming lipid component, the invention can include other lipid components capable of being incorporated into lipid bilayers, which for example can include sterols, saponin and Quil A (see page 8, lines 17-19 and 21; page 12, line 6). Foldvari et al. disclose that the adhesive layer that sticks to the skin is made from a pharmaceutically acceptable pressure sensitive adhesive (see page 13, lines 12-14). Foldvari et al. disclose that a wide variety of immunogens are suitable for use in the present invention, which include but are not limited to antigens derived from microorganisms, such as a virus, bacteria, parasite and/or fungus (see page 6, lines 27-33 and page 7, lines 1-20). Foldvari et al. discloses that the biphasic lipid vesicles of the invention include in the central core compartment of the lipid vesicle and in the aqueous space separating the lipid bilayers, an oil-in-water emulsion (see page 7, lines

23-25). Foldvari et al. disclose the use of enhancers such as monolauroyllysine or dipalmitoyllysine, an unsaturated fatty acid, such as oleic acid, a short chain fatty acid, such as lauric acid or methyl salicylate (see page 11, lines 15-19).

Since the Office does not have the facilities for examining and comparing applicants' composition with the composition of the prior art, the burden is on applicant to show a novel or unobvious difference between the claimed product and the prior art. See In re Best, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977) and In re Fitzgerald et al., 205 USPQ 594.

New Grounds of Rejection Necessitated by Amendment

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1, 4, 9, 10, 13, 16-18, 20, 21, 23, 25-27, 38-42, 44-54, 56, 60 and 61 are rejected under 35 U.S.C. 102(e) as being anticipated by Dalsgaard et al. (U.S. Patent U.S. 7, 713, 942 B2; filing date: 7/31/01).

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in

the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Claims 1, 4, 9, 10, 13, 16-18, 20, 21, 23, 25-27, 38-42, 44-54, 56, 60 and 61 are drawn to a construct for transdermal delivery of at least one immunogen to an individual comprising: a) said at least one immunogen, or at least one expressible nucleic acid encoding said immunogen; b) an occlusion vehicle and c) an immunogen delivery system comprising: i) at least one cationic sterol and ii) at least one saponin, wherein said saponin forms a complex with said cationic sterol, and wherein said complex adopts a micro-particle structure in the form of a rigid cage-like matrix; wherein, if the construct comprises said nucleic acid, said cationic sterol or said saponin interacts electrostatically or hydrophobically with said nucleic acid.

Dalsgaard et al. disclose a complex for transdermal delivery comprising at least one immunogen, an occlusion vehicle (transdermal patch), and an immunogen delivery system comprising: i) at least one cationic sterol and ii) at least one saponin, wherein said saponin forms a complex with said cationic sterol, and wherein said complex adopts a micro-particle structure in the form of a rigid cage-like matrix (about 30-40 nanometers in diameter); wherein, if the construct comprises said nucleic acid, said cationic sterol or said saponin interacts electrostatically or hydrophobically with said nucleic acid (see column 2, lines 1-19, 54-65; column 13, lines 42-45; column 66, line 25; column 72, lines 47-50). Dalsgaard et al. disclose that many antigens can be inserted into the ISCOM structure by mixing Quil A, cholesterol and phospholipid with the protein of interest (see column 72, lines 47-50). Dalsgaard et al. disclose that the

saponin can be anionic, neutral or cationic (see column 4, line 40-42). The saccharide moiety of saponins contains 11 or less monosaccharide units (see column 27, lines 48-53). Dalsgaard et al. disclose that the sterols comprise DC-cholesterol (see column 37, lines 20-24). The compound also comprises alcohols, fatty acids and polyethylene glycols (see column 38, lines 11-12). Dalsgaard et al. disclose that in one embodiment of the invention an immunogenic determinant may be a genetic determinant encoding a substance capable of raising an immune response. Moreover, Dalsgaard et al. disclose that the immunogenic determinant may be a nucleic acid, such as DNA or RNA encoding a (poly)peptide; polypeptides and lipopeptides (see column 71, lines 20-22). The complexes according to the invention may be used as carriers of bacterial immunogenic determinants from one or more bacteria and may be employed as vaccines. Bacteria for which vaccines can be formulated include, but are not limited to: *Helicobacter pylori, Chlamydia pneumoniae, Chlamydia trachomatis, Ureaplasma urealyticum, Mycoplasma pneumoniae,* Staphylococcus spp., *Staphylococcus aureus,* Streptococcus *spp., Streptococcus pyogenes, Streptococcus pneumoniae, Streptococcus viridans, Enterococcus faecalis, Neisseria meningitidis, Neisseria gonorrhoeae, Bacillus anthracis,* Salmonella spp., *Salmonella typhi, Vibrio cholera, Pasteurella pestis, Pseudomonas aeruginosa,* Campylobacter spp., *Campylobacter jejuni,* Clostridium spp., *Clostridium difficile,* Mycobacterium spp., *Mycobacterium tuberculosis,* Treponema spp., *Borrelia* spp., *Borrelia burgdorferi,* Leptospira spp., *Hemophilus ducreyi, Corynebacterium diphtheria, Bordetella pertussis, Bordetella parapertussis, Bordetella bronchiseptica, hemophilus influenza, Escherichia coli,*

Shigella spp., Erlichia spp., and Rickettsia spp. Dalsgaard et al. disclose that vaccines of the present invention may also include one or more immunogenic determinants and/or antigenic determinants from a particular virus to form a vaccine. Viruses for which vaccines can be formulated include, but are not limited to: Influenza viruses, Parainfluenza viruses, Mumps virus, Adenoviruses, Respiratory syncytial virus, Epstein-Barr virus, Rhinoviruses, Polioviruses, Rubeola virus, Rubella virus, Varicell-zoster virus, Herpes viruses (human and animal), Herpes simplex virus, Parvoviruses (human and animal), Cytomegalovirus, Hepatitis viruses, Human papillomavirus, Alphaviruses, Flaviviruses, Bunyaviruses, Rabies virus among others (see column 57, lines 10-67; column 71, lines 17-22). Dalsgaard et al. disclose that for immunization of humans a suitable carrier includes a tetanus toxoid (see column 59, lines 50-53). The composition of said invention can be formulated into a controlled released composition (see column 66, lines 55-57) and the sustained release compositions can be prepared by mixing components in any optional order, thus meeting the limitation of having one or more compartments (see column 69, lines 4-5).

Since the Office does not have the facilities for examining and comparing applicants' composition with the composition of the prior art, the burden is on applicant to show a novel or unobvious difference between the claimed product and the prior art. See In re Best, 562 F.2d 1252, 195 USPQ 430 (CCPA 1977) and In re Fitzgerald et al., 205 USPQ 594.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

10. Claims 1, 2, 4-6, 9, 10, 13, 16-18, 20, 21, 23, 25-27, 32-34, 38-42, 44-54, 56, 60 and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dalsgaard et al. (U.S. Patent U.S. 7, 713, 942 B2; filing date: 7/31/01), and further in view of British Pharmacopoeia 1993 (Surgical Materials, 1996; 1943-1944).

Claims 1, 2, 4-6, 9, 10, 13, 16-18, 20, 21, 23, 25-27, 32-34, 38-42, 44-54, 56, 60 and 61 are drawn to a construct for transdermal delivery of at least one immunogen to an individual comprising: a) said at least one immunogen, or at least one expressible nucleic acid encoding said immunogen; b) an occlusion vehicle and c) an immunogen delivery system comprising: i) at least one cationic sterol and ii) at least one saponin, wherein said saponin forms a complex with said cationic sterol, and wherein said complex adopts a micro-particle structure in the form of a rigid cage-like matrix; wherein, if the construct comprises said nucleic acid, said cationic sterol or said saponin interacts electrostatically or hydrophobically with said nucleic acid.

Dalsgaard et al. disclose a complex for transdermal delivery comprising at least one immunogen, an occlusion vehicle (transdermal patch), and an immunogen delivery system comprising: i) at least one cationic sterol and ii) at least one saponin, wherein said saponin forms a complex with said cationic sterol, and wherein said complex

adopts a micro-particle structure in the form of a rigid cage-like matrix (about 30-40 nanometers in diameter); wherein, if the construct comprises said nucleic acid, said cationic sterol or said saponin interacts electrostatically or hydrophobically with said nucleic acid (see column 2, lines 1-19, 54-65; column 13, lines 42-45; column 66, line 25; column 72, lines 47-50). Dalsgaard et al. disclose that many antigens can be inserted into the ISCOM structure by mixing Quil A, cholesterol and phospholipid with the protein of interest (see column 72, lines 47-50). Dalsgaard et al. disclose that the saponin can be anionic, neutral or cationic (see column 4, line 40-42). The saccharide moiety of saponins contains 11 or less monosaccharide units (see column 27, lines 48-53). Dalsgaard et al. disclose that the sterols comprise DC-cholesterol (see column 37, lines 20-24). The compound also comprises alcohols, fatty acids and polyethylene glycols (see column 38, lines 11-12). Dalsgaard et al. disclose that in one embodiment of the invention an immunogenic determinant may be a genetic determinant encoding a substance capable of raising an immune response. Moreover, Dalsgaard et al. disclose that the immunogenic determinant may be a nucleic acid, such as DNA or RNA encoding a (poly)peptide; polypeptides and lipopeptides (see column 71, lines 20-22). The complexes according to the invention may be used as carriers of bacterial immunogenic determinants from one or more bacteria and may be employed as vaccines. Bacteria for which vaccines can be formulated include, but are not limited to: *Helicobacter pylori, Chlamydia pneumoniae, Chlamydia trachomatis, Ureaplasma urealyticum, Mycoplasma pneumoniae,* Staphylococcus spp., *Staphylococcus aureus,* Streptococcus *spp., Streptococcus pyogenes, Streptococcus pneumoniae,*

Streptococcus viridans, Enterococcus faecalis, Neisseria menirigitidis, Neisseria gonorrhoeae, Bacillus anthracis, Salmonella spp., *Salmonella typhi, Vibrlo cholera, Pasteurella pestis, Pseudomonas aeruginosa,* Campylobacter spp., *Campylobacter jejuni,* Clostridium spp., *Clostridium difficile,* Mycobacterium spp., *Mycobacterium tuberculosis,* Treponema spp., *Borrelia* spp., *Borrelia burgdorferi,* Leptospira spp., *Hemophilus ducreyi, Corynebacterium diphtheria, Bordetella pertussis, Bordetella parapertussis, Bordetella bronchiseptica, hemophilus influenza, Escherichia coli,* Shigella spp., Erlichia spp., and Rickettsia spp. Dalsgaard et al. disclose that vaccines of the present invention may also include one or more immunogenic determinants and/or antigenic determinants from a particular virus to form a vaccine. Viruses for which vaccines can be formulated include, but are not limited to: Influenza viruses, Parainfluenza viruses, Mumps virus, Adenoviruses, Respiratory syncytial virus, Epstein-Barr virus, Rhinoviruses, Polioviruses, Rubeola virus, Rubella virus, Varicell-zoster virus, Herpes viruses (human and animal), Herpes simplex virus, Parvoviruses (human and animal), Cytomegalovirus, Hepatitis viruses, Human papillomavirus, Alphaviruses, Flaviviruses, Bunyaviruses, Rabies virus among others (see column 57, lines 10-67; column 71, lines 17-22). Dalsgaard et al. disclose that for immunization of humans a suitable carrier includes a tetanus toxoid (see column 59, lines 50-53). The composition of said invention can be formulated into a controlled released composition (see column 66, lines 55-57) and the sustained release compositions can be prepared by mixing components in any optional order, thus meeting the limitation of having one or more compartments (see column 69, lines 4-5).

Dalsgaard et al. do not specifically disclose that the occlusion vehicle is a hydrocolloid as recited in claims 2, 5 and 6; nor do they disclose having at least two compartments, wherein the first compartment comprises a lyophilized pad comprising the immunogen and the immunogen delivery system and a second compartment contains a solvent/diluent as recited in claim 33.

British Pharmacopoeia 1993 discloses semi permeable hydrocolloid Dressings which are a sterile, self-adhesive, waterproof, multi-component structure which can be used for wound dressings and medicated bandages (see page 1943).

Dalsgaard et al. and British Pharmacopoeia 1993 disclose analogous inventions related to a product for transdermal delivery. It would have been obvious at the time the invention was made to use the hydrocolloid dressing of British Pharmacopoeia 1993 with the composition of Dalsgaard et al., because hydrocolloid dressings are a sterile, self-adhesive, waterproof, multi-component structure that would be effective in delivering at least one immunogen to an individual. Moreover, it would have been obvious at the time the invention was made to use the hydrocolloid in combination with an immungen for effective transdermal administration because all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention.

Further, it would have been obvious to have at least two compartments, wherein a first compartment comprises a lyophilized pad comprising the immunogen and a

second compartment comprises water or other appropriate solvent/diluent because it will help with preservation of said immunogen, inhibit the action of microorganisms and enzymes that would normally spoil or degrade the substance, to increase the shelf life of the immunogen and to quickly and easily rehydrate or reconstitute said immunogen.

It would have been expected, barring evidence to the contrary, that the hydrocolloid dressing would be effective for transdermal delivery of at least one immunogen. KSR forecloses the argument that a **specific** teaching, suggestion, or motivation is required to support a finding of obvious. See the recent Board decision *Ex parte Smith,--USPQ2d--,* slip op. at 20, (Bd. Pat. App. & Interf. June 25, 2007) (citing *KSR, 82 USPQ2d* at 1396).

11. Claims 1, 2, 4-10, 13, 16-18, 20, 21, 23, 25-27, 32-34, 38-42, 44-54, 56, 60 and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dalsgaard et al. (U.S. Patent U.S. 7, 713, 942 B2; filing date: 7/31/01), and further in view of Lee et al. (International Journal of Pharmaceutics, 2001; 221: 1-22).

Claims 1, 2, 4-10, 13, 16-18, 20, 21, 23, 25-27, 32-34, 38-42, 44-54, 56, 60 and 61 are drawn to a construct for transdermal delivery of at least one immunogen to an individual comprising: a) said at least one immunogen, or at least one expressible nucleic acid encoding said immunogen; b) an occlusion vehicle and c) an immunogen delivery system comprising: i) at least one cationic sterol and ii) at least one saponin, wherein said saponin forms a complex with said cationic sterol, and wherein said complex adopts a micro-particle structure in the form of a rigid cage-like matrix;

wherein, if the construct comprises said nucleic acid, said cationic sterol or said saponin interacts electrostatically or hydrophobically with said nucleic acid.

Dalsgaard et al. disclose a complex for transdermal delivery comprising at least one immunogen, an occlusion vehicle (transdermal patch), and an immunogen delivery system comprising: i) at least one cationic sterol and ii) at least one saponin, wherein said saponin forms a complex with said cationic sterol, and wherein said complex adopts a micro-particle structure in the form of a rigid cage-like matrix (about 30-40 nanometers in diameter); wherein, if the construct comprises said nucleic acid, said cationic sterol or said saponin interacts electrostatically or hydrophobically with said nucleic acid (see column 2, lines 1-19, 54-65; column 13, lines 42-45; column 66, line 25; column 72, lines 47-50). Dalsgaard et al. disclose that many antigens can be inserted into the ISCOM structure by mixing Quil A, cholesterol and phospholipid with the protein of interest (see column 72, lines 47-50). Dalsgaard et al. disclose that the saponin can be anionic, neutral or cationic (see column 4, line 40-42). The saccharide moiety of saponins contains 11 or less monosaccharide units (see column 27, lines 48-53). Dalsgaard et al. disclose that the sterols comprise DC-cholesterol (see column 37, lines 20-24). The compound also comprises alcohols, fatty acids and polyethylene glycols (see column 38, lines 11-12). Dalsgaard et al. disclose that in one embodiment of the invention an immunogenic determinant may be a genetic determinant encoding a substance capable of raising an immune response. Moreover, Dalsgaard et al. disclose that the immunogenic determinant may be a nucleic acid, such as DNA or RNA encoding a (poly)peptide; polypeptides and lipopeptides (see column 71, lines 20-22).

The complexes according to the invention may be used as carriers of bacterial immunogenic determinants from one or more bacteria and may be employed as vaccines. Bacteria for which vaccines can be formulated include, but are not limited to: *Helicobacter pylori, Chlamydia pneumoniae, Chlamydia trachomatis, Ureaplasma urealyticum, Mycoplasma pneumoniae,* Staphylococcus spp., *Staphylococcus aureus,* Streptococcus *spp., Streptococcus pyogenes, Streptococcus pneumoniae, Streptococcus viridans, Enterococcus faecalis, Neisseria meningitidis, Neisseria gonorrhoeae, Bacillus anthracis,* Salmonella spp., *Salmonella typhi, Vibrlo cholera, Pasteurella pestis, Pseudomonas aeruginosa,* Campylobacter spp., *Campylobacter jejuni,* Clostridium spp., *Clostridium difficile,* Mycobacterium spp., *Mycobacterium tuberculosis,* Treponema spp., *Borrelia* spp., *Borrelia burgdorferi,* Leptospira spp., *Hemophilus ducreyi, Corynebacterium diphtheria, Bordetella pertussis, Bordetella parapertussis, Bordetella bronchiseptica, hemophilus influenza, Escherichia coli,* Shigella spp., Erlichia spp., and Rickettsia spp. Dalsgaard et al. disclose that vaccines of the present invention may also include one or more immunogenic determinants and/or antigenic determinants from a particular virus to form a vaccine. Viruses for which vaccines can be formulated include, but are not limited to: Influenza viruses, Parainfluenza viruses, Mumps virus, Adenoviruses, Respiratory syncytial virus, Epstein-Barr virus, Rhinoviruses, Polioviruses, Rubeola virus, Rubella virus, Varicell-zoster virus, Herpes viruses (human and animal), Herpes simplex virus, Parvoviruses (human and animal), Cytomegalovirus, Hepatitis viruses, Human papillomavirus, Alphaviruses, Flaviviruses, Bunyaviruses, Rabies virus among others (see column 57, lines 10-67;

column 71, lines 17-22). Dalsgaard et al. disclose that for immunization of humans a suitable carrier includes a tetanus toxoid (see column 59, lines 50-53). The composition of said invention can be formulated into a controlled released composition (see column 66, lines 55-57) and the sustained release compositions can be prepared by mixing components in any optional order, thus meeting the limitation of having one or more compartments (see column 69, lines 4-5).

Dalsgaard et al. do not specifically disclose that the occlusion vehicle is a hydrogel adhesive as recited in claims 7 and 8.

Lee et al. disclose that hydrogels have been widely used as a drug carrier due to its ease in manufacturing and self application. Lee et al. disclose that the component loaded into the hydrogel can be released in a controlled release pattern. Lastly, Lee et al. disclose that the process of cross-linking can significantly manipulate the release rates of the entrapped drugs (see pages 10-11; section 3.5).

Dalsgaard et al. and Lee et al. disclose analogous inventions related to a product for transdermal delivery. It would have been obvious at the time the invention was made to use the hydrogel of Lee et al. because of its ease in manufacture and self application (see Lee et al. Page 10). Moreover, it would have been obvious at the time the invention was made to use the cross-linked hydrogel because all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention.

Further, it would have been obvious to have at least two compartments, wherein a first compartment comprises a lyophilized pad comprising the immunogen and a second compartment comprise water or other appropriate solvent/diluent because it will help with preservation of said immunogen, inhibit the action of microorganisms and enzymes that would normally spoil or degrade the substance, to increase the shelf life of the immunogen and to quickly and easily rehydrate or reconstitute said immunogen.

It would have been expected, barring evidence to the contrary, that the hydrogel would be effective for transdermal delivery of at least one immunogen. KSR forecloses the argument that a **specific** teaching, suggestion, or motivation is required to support a finding of obvious. See the recent Board decision *Ex parte Smith,--USPQ2d--*, slip op. at 20, (Bd. Pat. App. & Interf. June 25, 2007) (citing *KSR, 82 USPQ2d* at 1396). By all comparative data the composition of the prior art and the instantly claimed composition absent evidence to the contrary are one in the same.

12. Claims 1, 2, 4-6, 9, 10, 13, 18, 20, 21, 23, 25-27, 32-34, 38-42, 44, 46, 47, 49-56 and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Hagan et al.; filing date: 4/17/02), and further in view of British Pharmacopoeia 1993 (Surgical Materials, 1996; 1943-1944).

Claims 1, 2, 4-6, 9, 10, 13, 18, 20, 21, 23, 25-27, 32-34, 38-42, 44, 46, 47, 49-56 and 61 are drawn to a construct for transdermal delivery of at least one immunogen to an individual comprising: a) said at least one immunogen, or at least one expressible nucleic acid encoding said immunogen; b) an occlusion vehicle and c) an immunogen delivery system comprising: i) at least one cationic sterol and ii) at least one saponin,

wherein said saponin forms a complex with said cationic sterol, and wherein said complex adopts a micro-particle structure in the form of a rigid cage-like matrix; wherein, if the construct comprises said nucleic acid, said cationic sterol or said saponin interacts electrostatically or hydrophobically with said nucleic acid.

O'Hagan et al. disclose vaccine compositions for transdermal application which include immunological adjuvants to enhance an immune response. The invention includes the use of interferon inducers in combination with one or more antigen delivery system, such as microparticles and ISCOMs, which are effective for enhancing the immunogenicity of a variety of vaccine antigens for use in both prophylactic and therapeutic compositions (see paragraphs 0008 and 0201). ISCOMs are useful antigen delivery systems (see paragraph 0178). The composition can comprise mixtures of one or more antigens such as viral and bacterial antigens (see paragraph 0194). O'Hagan et al. disclose that the ISCOM matrix may be formed by the combination of a sterol, such as cholesterol, saponin, such as Quil A, a phospholipid and immunogens. The formulation is approximately 40 nm and is in a cage-like pentagonal structure, which is necessarily rigid in nature (see paragraphs 0179-0180). O'Hagan et al. disclose that the antigen can be a molecule containing one ore more epitopes that will stimulate a host immune system to make a cellular immune response as well as proteins which are separate and discrete from a whole organism with which the antigen is associated in nature, as well as killed, attenuated or inactivated bacteria, viruses, parasites and other microbes. Additionally, oligonucleotide or polynucleotide which expresses a therapeutic or immunogenic protein or antigenic determinant such as in nucleic acid immunization

application is included in the definition (see paragraph 0053). O'Hagan et al. disclose that the present invention will find use for stimulating an immune response against a wide variety of proteins from the herpes virus family, varicIla zoster virus, Epstein-Barr virus, cytomegalovirus and antigens from the hepatitis family particularly, hepatitis B virus (see paragraphs 0094-95). O'Hagan et al. also disclose the use of an HCV antigen such as an HCV polypeptide (see paragraphs 0011-12). O'Hagan et al. disclose that the invention also uses antigens derived from *Neisseria meningitidis*. The polysaccharides from Neisseria spp. are also effective for use in vaccines (see paragraph 0122). O'Hagan et al. disclose that the use of surfactants and polyoxyethylene fatty acids are suitable for use in said formulation (see paragraph 0149). Moreover, microparticles in the diameter of about 100 nm will also find use as antigen delivery systems; preferably the microparticle will be of a diameter that permits parenteral administration and the size is readily determined by techniques well known in the art (see paragraph 0156). O'Hagan et al. disclose that when preparing the ISCOMs suitable phospholipids including phosphatidylcholine and polyethylene glycol are used (see paragraphs 0182-83). Carriers are optional in this invention and include bacterial toxoids such as a tetanus toxoid (see paragraph 0196).

Regarding the specific diameters of a microparticle as listed in the instant claims, MPEP 2144.05 states, "Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) (Claimed process which was performed at a

temperature between 40°C and 80°C and an acid concentration between 25% and 70% was held to be *prima facie* obvious over a reference process which differed from the claims only in that the reference process was performed at a temperature of 100°C and an acid concentration of 10%.); see also *Peterson*, 315 F.3d at 1330, 65 USPQ2d at 1382 ("The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages."); *In re Hoeschele*, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969) (Claimed elastomeric polyurethanes which fell within the broad scope of the references were held to be unpatentable thereover because, among other reasons, there was no evidence of the criticality of the claimed ranges of molecular weight or molar proportions.). For more recent cases applying this principle, see *Merck & Co. Inc. v. Biocraft Laboratories Inc.*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), *cert. denied*, 493 U.S. 975 (1989); *In re Kulling*, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990); and *In re Geisler,* 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997)."

Limitations such as the size of a microparticle are being viewed as limitations of optimizing experimental parameters.

O'Hagan et al. do not specifically disclose that the occlusion vehicle is a hydrocolloid as recited in claims 2, 5 and 6; that the construct comprises at least two separate compartments; or that they disclose having at least two compartments, wherein the first compartment comprises a lyophilized pad comprising the immunogen and the immunogen delivery system and a second compartment contains a solvent/diluent as recited in claim 33.

British Pharmacopoeia 1993 discloses semi permeable hydrocolloid Dressings which are a sterile, self-adhesive, waterproof, multi-component structure which can be used for wound dressings and medicated bandages (see page 1943).

O'Hagan et al. and British Pharmacopoeia 1993 disclose analogous inventions related to a product for transdermal delivery. It would have been obvious at the time the invention was made to use the hydrocolloid dressing of British Pharmacopoeia 1993 with the composition of O'Hagan et al., because hydrocolloid dressings are a sterile, self-adhesive, waterproof, multi-component structure that would be effective in delivering at least one immunogen to an individual. Moreover, it would have been obvious at the time the invention was made to use the hydrocolloid in combination with an immungen for transdermal administration because all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention.

Further, it would have been obvious to have at least two compartments, wherein a first compartment comprises a lyophilized pad comprising the immunogen and a second compartment comprise water or other appropriate solvent/diluent because it will help with preservation of said immunogen, inhibit the action of microorganisms and enzymes that would normally spoil or degrade the substance, to increase the shelf life of the immunogen and to quickly and easily rehydrate or reconstitute said immunogen.

It would have been expected, barring evidence to the contrary, that the hydrocolloid dressing would be effective for transdermal delivery of at least one immunogen. KSR forecloses the argument that a **specific** teaching, suggestion, or motivation is required to support a finding of obvious. See the recent Board decision *Ex*

parte Smith,--USPQ2d--, slip op. at 20, (Bd. Pat. App. & Interf. June 25, 2007) (citing *KSR, 82 USPQ2d* at 1396).

13. Claims 1, 2, 4-10, 13, 16, 18, 20, 21, 23, 25-27, 32-34, 38-42, 44, 46, 47, 49-56 and 61 are rejected under 35 U.S.C. 103(a) as being unpatentable over O'Hagan et al.; filing date: 4/17/02), and further in view of Lee et al. (International Journal of Pharmaceutics, 2001; 221: 1-22).

Claims 1, 2, 4-10, 13, 16, 18, 20, 21, 23, 25-27, 32-34, 38-42, 44, 46, 47, 49-56 and 61 are drawn to a construct for transdermal delivery of at least one immunogen to an individual comprising: a) said at least one immunogen, or at least one expressible nucleic acid encoding said immunogen; b) an occlusion vehicle and c) an immunogen delivery system comprising: i) at least one cationic sterol and ii) at least one saponin, wherein said saponin forms a complex with said cationic sterol, and wherein said complex adopts a micro-particle structure in the form of a rigid cage-like matrix; wherein, if the construct comprises said nucleic acid, said cationic sterol or said saponin interacts electrostatically or hydrophobically with said nucleic acid.

O'Hagan et al. disclose vaccine compositions for transdermal application which include immunological adjuvants to enhance an immune response. The invention includes the use of interferon inducers in combination with one or more antigen delivery system, such as microparticles and ISCOMs, which are effective for enhancing the immunogenicity of a variety of vaccine antigens for use in both prophylactic and therapeutic compositions (see paragraphs 0008 and 0201). ISCOMs are useful antigen

delivery systems (see paragraph 0178). The composition can comprise mixtures of one or more antigens such as viral and bacterial antigens (see paragraph 0194). O'Hagan et al. disclose that the ISCOM matrix may be formed by the combination of a sterol, such as cholesterol, saponin, such as Quil A, a phospholipid and immunogens. The formulation is approximately 40 nm and is in a cage-like pentagonal structure, which is necessarily rigid in nature (see paragraphs 0179-0180). O'Hagan et al. disclose that the antigen can be a molecule containing one ore more epitopes that will stimulate a host immune system to make a cellular immune response as well as proteins which are separate and discrete from a whole organism with which the antigen is associated in nature, as well as killed, attenuated or inactivated bacteria, viruses, parasites and other microbes. Additionally, oligonucleotide or polynucleotide which expresses a therapeutic or immunogenic protein or antigenic determinant such as in nucleic acid immunization application is included in the definition (see paragraph 0053). O'Hagan et al. disclose that the present invention will find use for stimulating an immune response against a wide variety of proteins from the herpes virus family, varicIla zoster virus, Epstein-Barr virus, cytomegalovirus and antigens from the hepatitis family particularly, hepatitis B virus (see paragraphs 0094-95). O'Hagan et al. also disclose the use of an HCV antigen such as an HCV polypeptide (see paragraphs 0011-12). O'Hagan et al. disclose that the invention also uses antigens derived from *Neisseria meningitidis*. The polysaccharides from Neisseria spp. are also effective for use in vaccines (see paragraph 0122). O'Hagan et al. disclose that the use of surfactants and polyoxyethylene fatty acids are suitable for use in said formulation (see paragraph

0149). Moreover, microparticles in the diameter of about 100 nm will also find use as antigen delivery systems; preferably the microparticle will be of a diameter that permits parenteral administration and the size is readily determined by techniques well known in the art (see paragraph 0156). O'Hagan et al. disclose that when preparing the ISCOMs suitable phospholipids including phosphatidylcholine and polyethylene glycol are used (see paragraphs 0182-83). Carriers are optional in this invention and include bacterial toxoids such as a tetanus toxoid (see paragraph 0196).

Regarding the specific diameters of a microparticle as listed in the instant claims, MPEP 2144.05 states, "Generally, differences in concentration or temperature will not support the patentability of subject matter encompassed by the prior art unless there is evidence indicating such concentration or temperature is critical. "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) (Claimed process which was performed at a temperature between 40°C and 80°C and an acid concentration between 25% and 70% was held to be *prima facie* obvious over a reference process which differed from the claims only in that the reference process was performed at a temperature of 100°C and an acid concentration of 10%.); see also *Peterson*, 315 F.3d at 1330, 65 USPQ2d at 1382 ("The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages."); *In re Hoeschele*, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969) (Claimed elastomeric polyurethanes which fell within the broad scope of the references were held to be unpatentable thereover because, among other reasons, there was no evidence of the criticality of the claimed ranges of molecular weight or molar proportions.). For more recent cases applying this principle, see *Merck & Co. Inc. v. Biocraft Laboratories Inc.*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), *cert. denied*, 493 U.S. 975 (1989); *In re Kulling*, 897 F.2d 1147, 14

USPQ2d 1056 (Fed. Cir. 1990); and *In re Geisler,* 116 F.3d 1465, 43 USPQ2d 1362 (Fed. Cir. 1997)."

Limitations such as the size of a microparticle are being viewed as limitations of optimizing experimental parameters.

O'Hagan et al. do not specifically disclose that the occlusion vehicle is a hydrogel adhesive as recited in claims 7 and 8.

Lee et al. disclose that hydrogels have been widely used as a drug carrier due to its ease in manufacturing and self application. Lee et al. disclose that the component loaded into the hydrogel can be released in a controlled release pattern. Lastly, Lee et al. disclose that the process of cross-linking can significantly manipulate the release rates of the entrapped drugs (see pages 10-11; section 3.5).

O'Hagan et al. and Lee et al. disclose analogous inventions related to a product for transdermal delivery. It would have been obvious at the time the invention was made to use the hydrogel of Lee et al. because of its ease in manufacture and self application and the production of a large and constant surface area provides a major merit fro them to be widely used for clinical and fundamental applications (see Lee et al. Page 10). Moreover, it would have been obvious at the time the invention was made to use the cross-linked hydrogel because all the claimed elements were known in the prior art and one skilled in the art could have combined the elements as claimed by known methods with no change in their respective functions, and the combination would have yielded predictable results to one of ordinary skill in the art at the time of the invention.

Further, it would have been obvious to have at least two compartments, wherein a first compartment comprises a lyophilized pad comprising the immunogen and a

second compartment comprise water or other appropriate solvent/diluent because it will help with preservation of said immunogen, inhibit the action of microorganisms and enzymes that would normally spoil or degrade the substance, to increase the shelf life of the immunogen and to quickly and easily rehydrate or reconstitute said immunogen.

It would have been expected, barring evidence to the contrary, that the hydrogel would be effective for transdermal delivery of at least one immunogen. KSR forecloses the argument that a **specific** teaching, suggestion, or motivation is required to support a finding of obvious. See the recent Board decision *Ex parte Smith,--USPQ2d--,* slip op. at 20, (Bd. Pat. App. & Interf. June 25, 2007) (citing *KSR, 82 USPQ2d* at 1396). By all comparative data the composition of the prior art and the instantly claimed composition absent evidence to the contrary are one in the same.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

14. Claims 1, 2, 4-10, 13, 16-18, 20, 21, 23, 25-27, 32-34, 38-42, 44-56, 60 and 61 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. This is a New Matter rejection.

Applicant has amended claim 1 to recite in part "rigid cage-like matrix". This phrase does not appear in the specification, or original claims as filed. Applicant does not point out specific basis for this limitation in the application, and none is apparent. Applicant points to support in International Patent Application No. PCT/DK02/00229 and according the Applicant's remarks corresponds to US Patent 7,713,942. However, the incorporation by reference is improper and US Patent 7,713,942 claims priority to DK 2001 00560, which does not appear to correlate to International Patent Application No. PCT/DK02/00229.

To overcome this rejection Applicant must specifically point out the support for this limitation or cancel the new matter from the claims.

Conclusion

15. No claim is allowed.

16. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Ott et al. (U.S. 2005/0123599 A1).

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAKIA J. TONGUE whose telephone number is (571)272-2921. The examiner can normally be reached on Monday-Friday 8-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's acting supervisor, Patricia Duffy can be reached on 571-272-0855. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

LJT
10/8/10

/Vanessa L. Ford/

Primary Examiner, Art Unit 1645